Savannah River Basin Drought Contingency Plan Update

Basin Stakeholders Meeting

Presented by
Savannah District Project Delivery Team
June 14, 2006

Agenda

- Welcome Remarks / Introductions
- Review Drought-of-Record
- Review 1989 Drought Contingency Plan
- Review Draft EA Alternatives
- Conclusions
- Current Projections
- Q & A's

1998-2002 Drought Elevations & Projections

Hartwell Lake

Assumes inflows begin around 99% of Normal and return to 40% over 10 weeks

665.00
660.00
655.00
650.00
645.00
640.00

Thurmond maximum weekly average release 4500 cfs

Thurmond daily average release = 3600 cfs

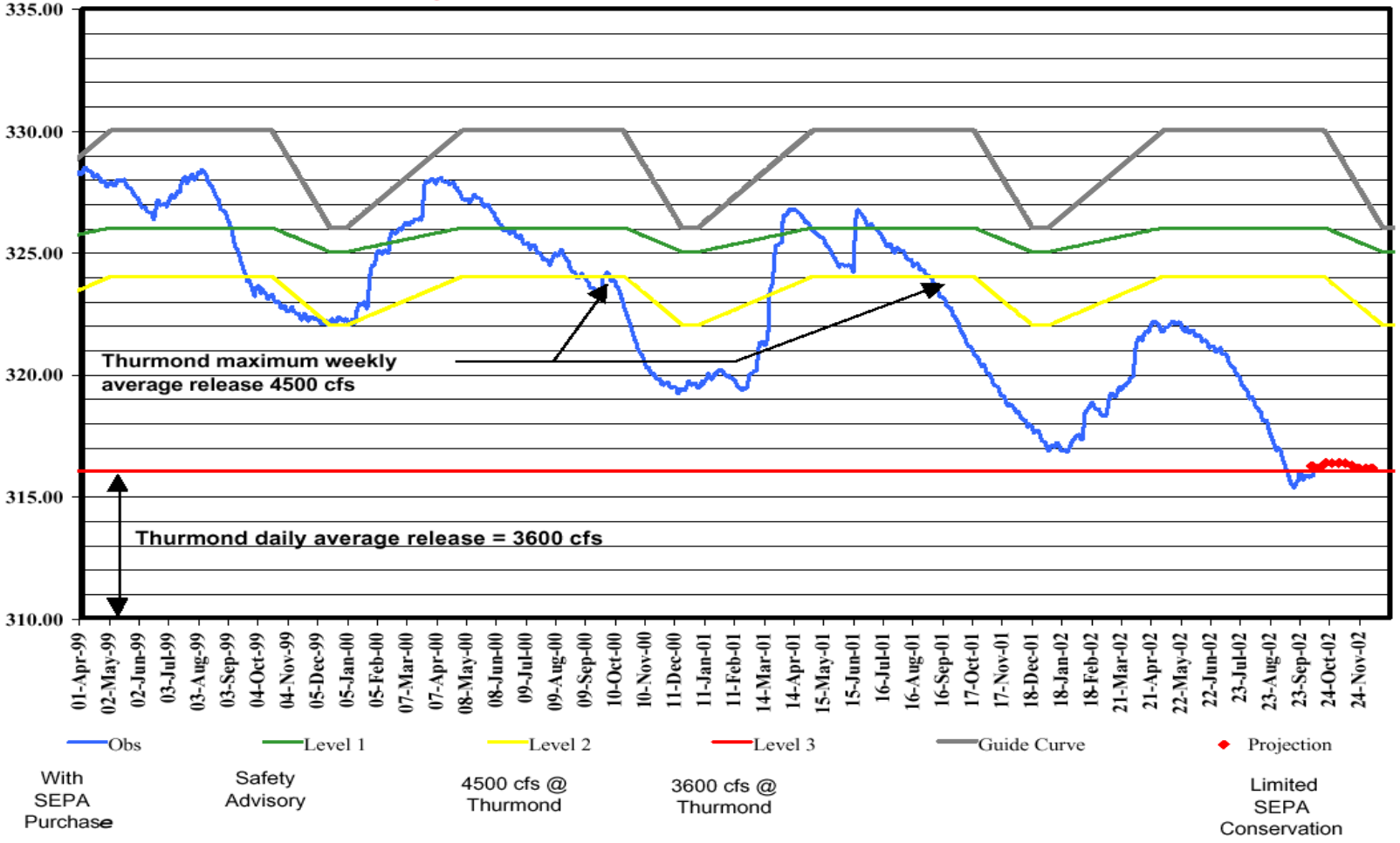
1-Apr-99, 2-May-99, 2-Jun-99, 3-Jul-99, 3-Aug-99, 3-Sep-99, 4-Oct-99, 4-Nov-99, 5-Dec-99, 5-Jan-00, 5-Feb-00, 7-Mar-00, 7-Apr-00, 8-May-00, 8-Jun-00, 9-Jul-00, 9-Aug-00, 9-Sep-00, 10-Oct-00, 10-Nov-00, 11-Dec-00, 11-Jan-01, 11-Feb-01, 14-Mar-01, 14-Apr-01, 15-May-01, 15-Jun-01, 16-Jul-01, 16-Aug-01, 16-Sep-01, 17-Oct-01, 17-Nov-01, 18-Dec-01, 18-Jan-02, 18-Feb-02, 21-Mar-02, 21-Apr-02, 22-May-02, 22-Jun-02, 23-Jul-02, 23-Aug-02, 23-Sep-02, 24-Oct-02, 24-Nov-02

Observed — With SEPA Purchases
Level 1 — Safety Advisory
Level 2 — 4500 cfs @ Thurmond
Level 3 — 3600 cfs @ Thurmond
Guide Curve
Projection — Limited SEPA Conservation

1998-2002 Drought Elevations & Projections

Thurmond Lake

Assumes inflows begin around 59% of Normal and return to 40% over 10 weeks



Savannah River Basin
1989 Drought Contingency Plan

- Developed by Army Corps of Engineers and states of GA and SC in 1989

- Reduces discharges at pre-defined triggers

  – Level 1 – Public Water Safety Alerts
  – Level 2 – Reduce Flows to 4500 cfs
  – Level 3 – Reduce Flows to 3600 cfs
  – Level 4 – JST Releases = inflows
  – Reduced Flows until Full Recovery

Nov 2004

Savannah River Basin
1989 Drought Contingency Plan

- **Drought Management Executive Committee**
  - USACE Savannah District Commander
  - SEPA Administrator
  - SCDNR Director
  - GADNR Commissioner
  - GA Emergency Management Agency
  - SC Water Resources Commission

Savannah River Basin
1989 Drought Contingency Plan

- **Savannah District Project Delivery Team**
  - Senior Project Manager
  - Water Manager
  - Public Affairs
  - JST, RBR, & Hartwell Operations Managers
  - Chief, Emergency Management
  - Chief, Operations Division
  - Chief, Planning Division
  - Chief, Engineering Division
  - Chief, Real Estate Division

Savannah River Basin
1989 Drought Contingency Plan

- **Interagency Project Delivery Team**
  - Savannah District PDT
  - SCDNR Representatives
  - GADNR Representatives
  - SEPA Representatives
  - USF&W Representatives

Draft EA Alternatives

No Action Alternative

This Alternative consists of the Corps taking no action to modify its existing SRBDCP. The operating procedures described in that 1989 Plan would continue to be implemented and forms the basis upon which comparisons to the other alternatives can be made.

Table 1: Hartwell Action Levels for the NAA

LEVEL*	18 APR – 15 OCT (ft-msl)	1 DEC – 1 JAN** (ft-msl)	ACTION
1	656	655	Public safety information
2	654	652	Reduce Thurmond discharge to 4500 cfs, reduce Hartwell discharge as appropriate to maintain balanced pools.
3	646	646	Reduce Thurmond discharge to 3600 cfs, reduce Hartwell discharge as appropriate to maintain balanced pools.
			maintain balanced pools.
4	625	625	Outflow = Inflow

Draft EA Alternatives

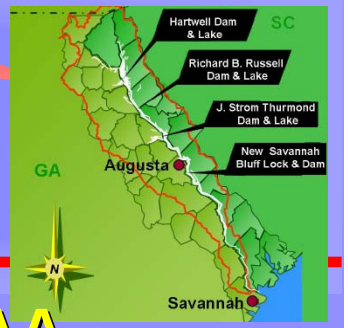
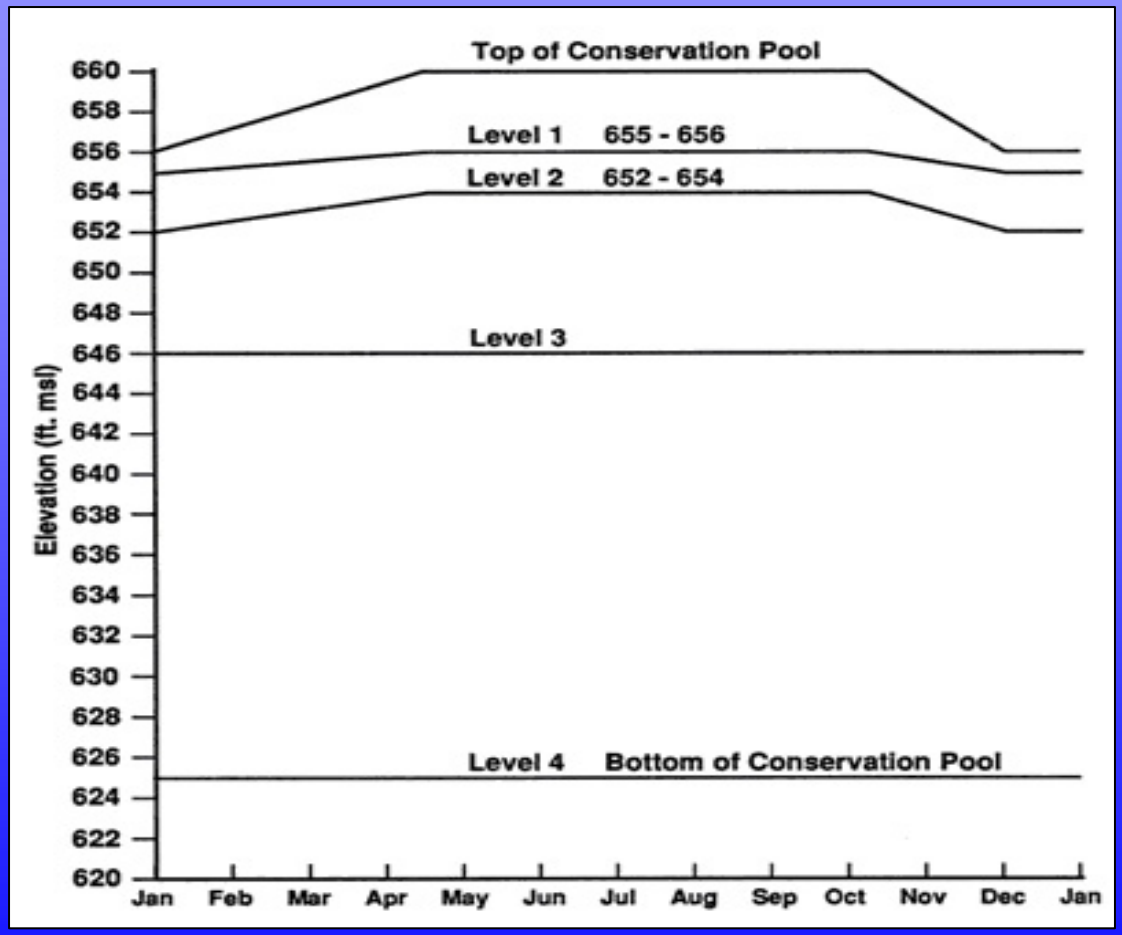


Figure 1: Hartwell Action Levels for the NAA



Draft EA Alternatives

Table 2: Thurmond Action Levels for the NAA

LEVEL*	1 MAY – 15 OCT (ft-msl)	15 DEC – 1 JAN** (ft-msl)	ACTION
1	326	325	Public safety information
2	324	322	Reduce Thurmond discharge to 4500 cfs.
3	316	316	Reduce Thurmond discharge to 3600 cfs.
4	312	312	Outflow = Inflow

Draft EA Alternatives

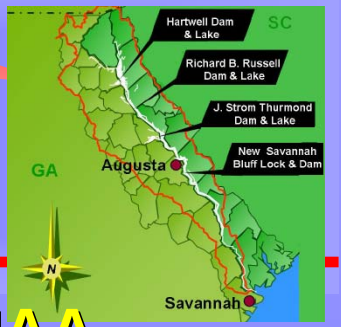
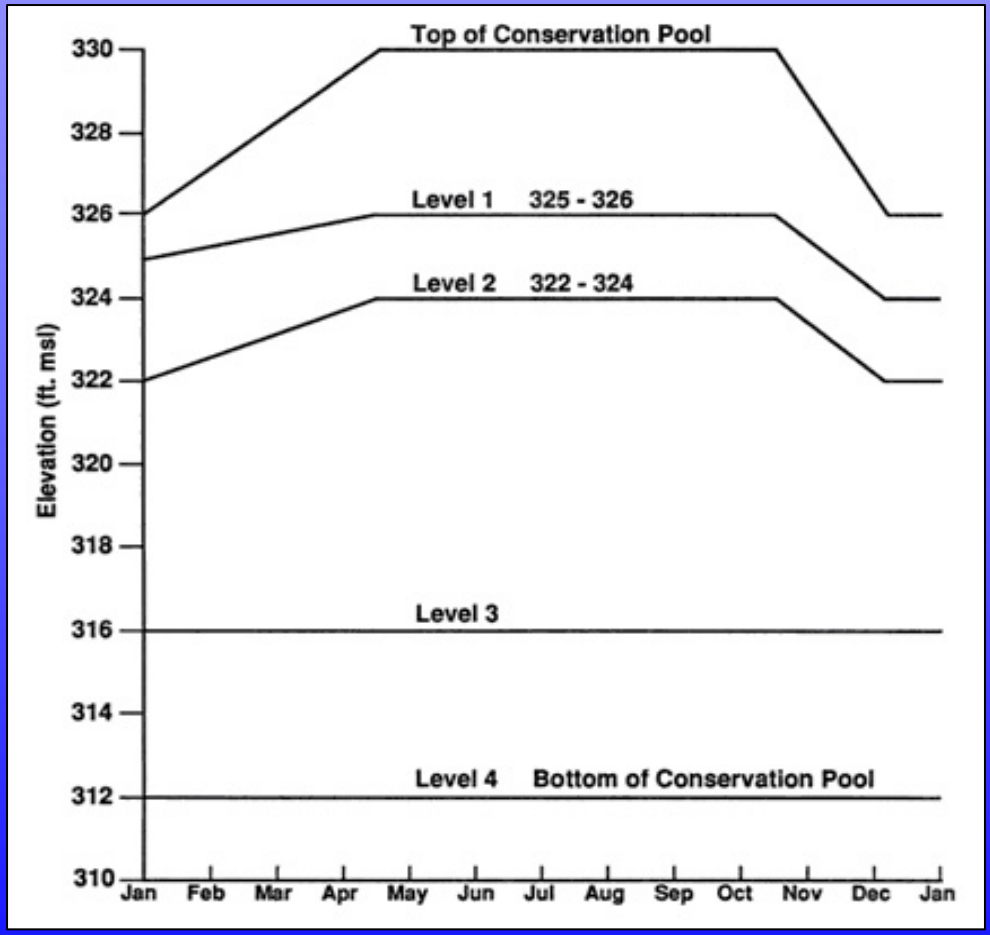


Figure 2: Thurmond Action Levels for the NAA



Draft EA Alternatives

Alternative 1

Alternative 1 consists of retaining major components of the 1989 SRBDCP and adding several other features. The discharge restrictions at Thurmond were allowed to transition back to higher flows prior to reaching full pool. A two-foot buffer was used to simulate engineering judgment to distinguish a lasting drought recovery from a temporary increase in inflows. The minimum daily average release at Thurmond was adjusted from 3600 cfs to 3800 cfs, and a maximum daily average release of 3800 cfs was specified in drought level 3. Drawdown dates at Hartwell and Thurmond Lakes would also be synchronized as listed in Table 3. Action thresholds are shown in Figure 3 and Figure 4.

Alternative 2

Alternative 2 includes all components of Alternative 1. Additionally, the maximum weekly average discharge at J. Strom Thurmond would be 4200 cfs and 4000 cfs for drought levels 1 and 2, respectively.

Alternative 3

Alternative 3 includes all components of Alternative 2, but the daily average release at Thurmond for Level 3 would be 3600 cfs.

Draft EA Alternatives

Table 3: Hartwell and Thurmond Action Levels for Alternative 1

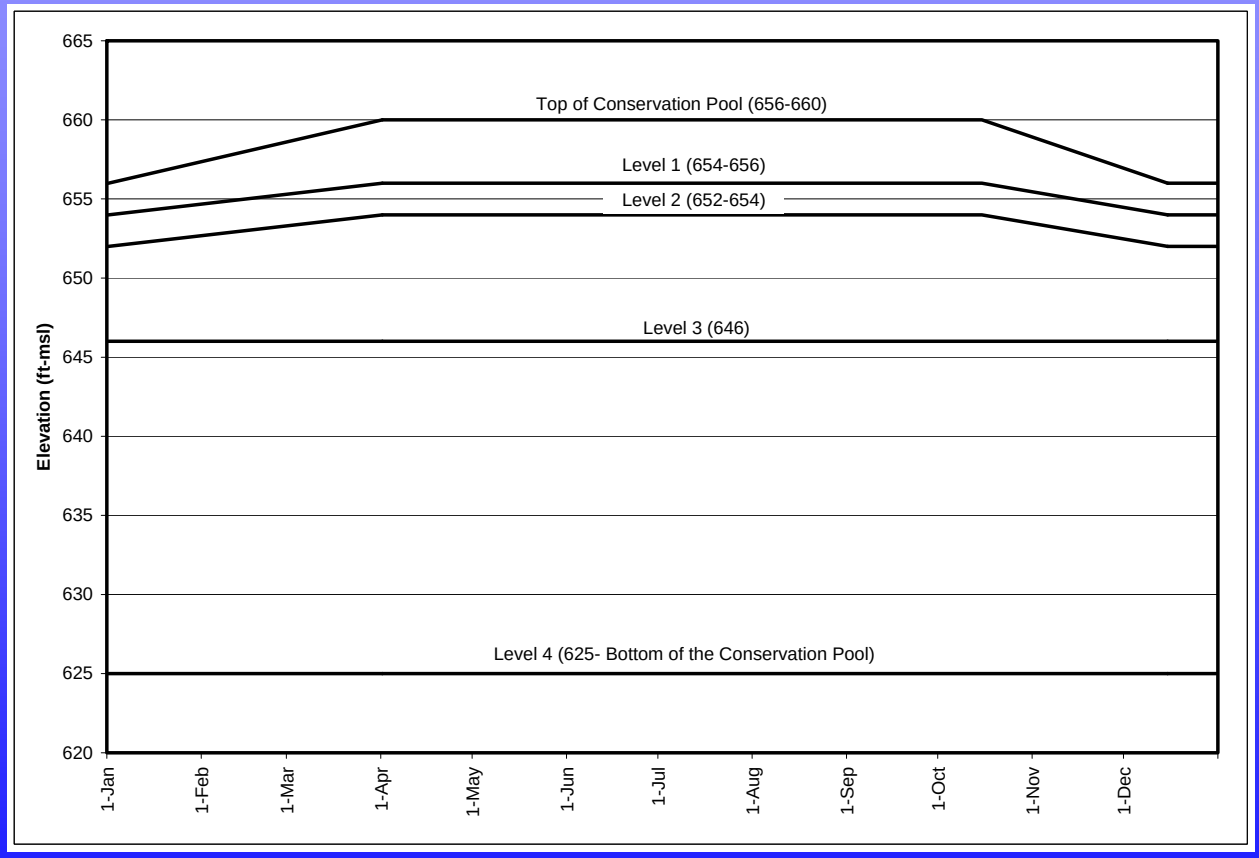
LEVEL	1 APR – 15 OCT (ft-msl)	15 DEC – 1 JAN (ft-msl)	ACTION
1	656 and 326	654 and 324	Public safety information
2	654 and 324	652 and 322	Reduce Thurmond discharge to 4500 cfs.
3	646 and 316	646 and 316	Reduce Thurmond discharge to 3800 cfs.
4	625 and 312	625 and 312	Outflow = Inflow

Table 4: Hartwell and Thurmond Action Levels for Alternative 2

LEVEL	1 APR – 15 OCT (ft-msl)	15 DEC – 1 JAN (ft-msl)	ACTION
1	656 and 326	654 and 324	Reduce Thurmond discharge to 4200 cfs.
2	654 and 324	652 and 322	Reduce Thurmond discharge to 4000 cfs.
3	646 and 316	646 and 316	Reduce Thurmond discharge to 3800 cfs.
4	625 and 312	625 and 312	Outflow = Inflow

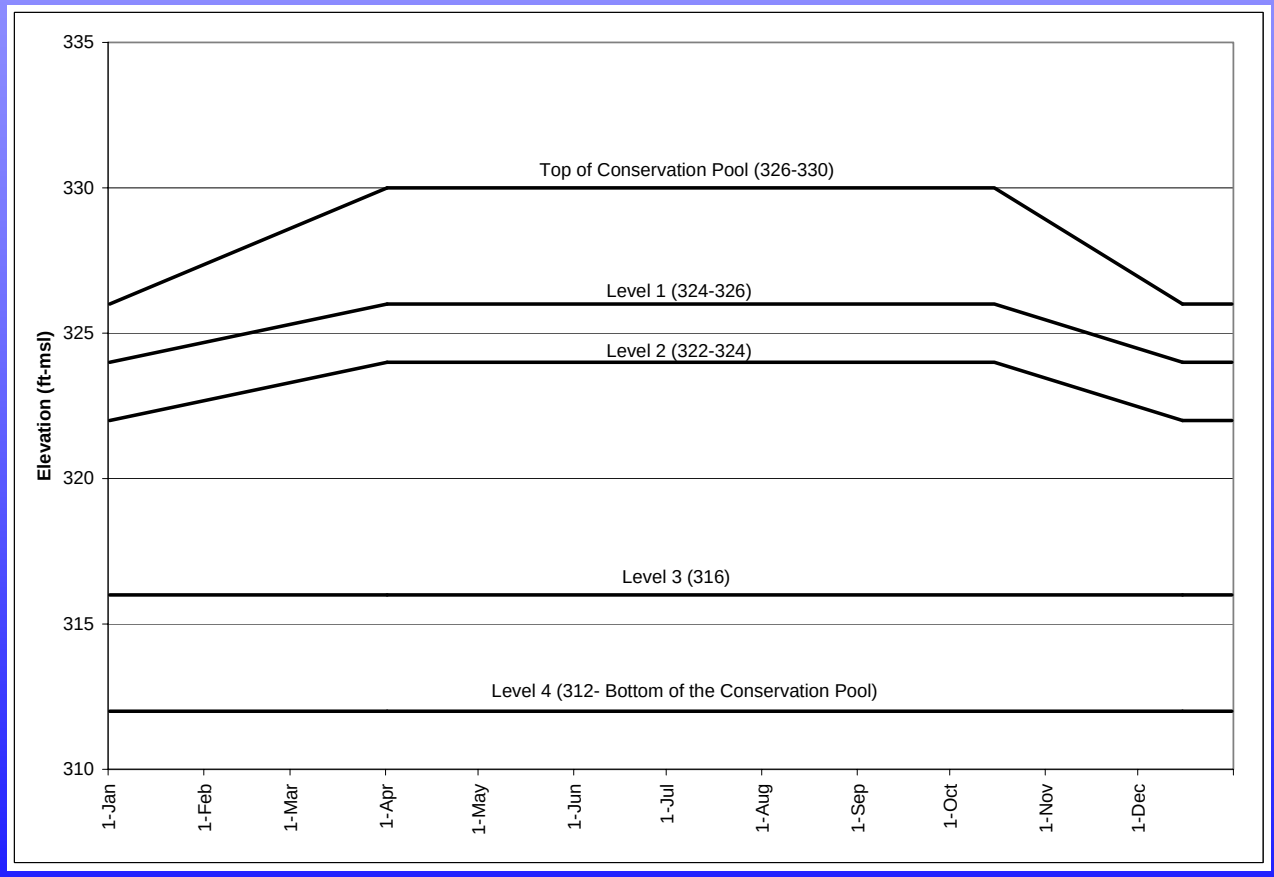
Draft EA Alternatives

Figure 3: Hartwell Action Levels for Alternatives 1, 2 and 3



Draft EA Alternatives

Figure 4: Thurmond Action Levels for Alternatives 1, 2 and 3



Conclusions/Comparison of Effects

Table 5: Comparison of Effects of the No Action Alternative, Alternatives 1, 2 and 3

RESOURCE	NO ACTION ALTERNATIVE	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Water Quality	No adverse impact	Minor positive impact for the Augusta, Millhaven and Clyo gaging stations	Minor positive impact for the Augusta, Millhaven and Clyo gaging stations	Minor positive impact for the Augusta, Millhaven and Clyo gaging stations
Biotic Communities-Lakes, by observing the Pool Elevation Tables	Acceptable impacts, because the existing Drought Contingency Plan would be used, 3 violations of the 6" April 1-28 pool lowering rule were observed.	No adverse impact, 2 violations of the 6" April 1-28 pool lowering rule were observed.	Minor adverse impact, 5 violations of the 6" April 1-28 pool lowering rule were observed.	Minor adverse impact, 5 violations of the 6" April 1-28 pool lowering rule were observed.
Biotic Communities-Shoals	Acceptable impacts			
-by downstream hydrographs		Minor positive impact as flows consistently 200 cfs higher than those of the No Action Alternative.	Minor positive impact as flows consistently 200-400 cfs higher than those of the No Action Alternative.	Minor positive impact as flows consistently 200-400 cfs higher than those of the No Action Alternative.
-by EFM		Minor positive impacts for each of the four model runs.	Minor positive impacts for each of the four model runs.	Minor positive impacts for three model runs and no impact for the fourth.
Biotic Communities-Floodplain (Lower flows recommended here)	No adverse impact			
For 2003 Workshop recommendation -by downstream hydrographs		Minor adverse impact as flows are often 200-900 cfs higher than the No Action Alternative. Reducing flows to the levels recommended in the Scientific Stakeholders Workshop of April 2003 would produce adverse impacts for other Savannah River resources.	Minor adverse impact as flows are often 100-1000 cfs higher than the No Action Alternative. Reducing flows to the levels recommended in the Scientific Stakeholders Workshop of April 2003 would produce adverse impacts for other Savannah River resources.	The Dowmstream Hydrograph is very similar to that of Alternative 2 at left, so a minor adverse impact would result.

Conclusions/Comparison of Effects

Table 5: Comparison of Effects of the No Action Alternative, Alternatives 1, 2 and 3 (Cont.)

RESOURCE	NO ACTION ALTERNATIVE	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
For 10,000 stream cfs channel capacity -by downstream hydrographs		No adverse impact as flows are rarely above 9000 cfs during the drought. Coordination of Thurmond releases would be required to achieve seedling establishment.	No adverse impact as flows are rarely above 9000 cfs during the drought. Coordination of Thurmond releases would be required to achieve seedling establishment.	The Dowmstream Hydrograph is very similar to that of Alternative 2 at left, so no adverse impact would result.
Biotic Communities-Estuary	Acceptable impacts			
-by downstream hydrographs		Minor positive impact as flows are 200-1000 cfs higher than the No Action Alternative for December 2000 through November 2002.	Minor positive impact as flows are higher for longer than those of the No Action Alternative.	Minor positive impact as flows are higher for longer than those of the No Action Alternative.
-by EFM		Minor positive impacts	Minor positive impacts	Minor positive impacts
Threatened and Endangered Species	Acceptable impacts		.	
-by downstream hydrographs		Minor positive impact with a predominant 200 cfs flow increase.	Minor positive impact with a predominant 200-400 cfs flow increase	Minor positive impact with a predominant 200-400 cfs flow increase.
-by EFM		Minor positive impacts.	Minor positive impacts.	Minor positive impacts for three model runs and no adverse impact for the fourth.
Recreation, Boat-Launching Ramps and Docks		Hartwell: Minor Adverse RBR: No Adverse JST: Minor Adverse	Hartwell: Positive RBR: No Adverse JST: Positive	Hartwell: Positive RBR: No Adverse JST: Positive
Recreation, Swimming		Hartwell: No Adverse RBR: Not Applicable JST: No Adverse	Hartwell: Minor Positive RBR: Not Applicable JST: No Adverse	Hartwell: Minor Positive RBR: Not Applicable JST: No Adverse

Conclusions/Comparison of Effects

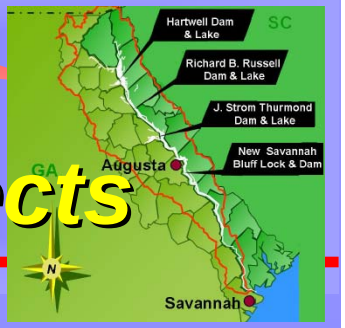


Table 5: Comparison of Effects of the No Action Alternative, Alternatives 1, 2 and 3 (Cont.)

RESOURCE	NO ACTION ALTERNATIVE	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Water Supply		Hartwell: No Adverse RBR: No Adverse JST: No Adverse Below JST Augusta: Positive	Hartwell: No Adverse RBR: No Adverse JST: No Adverse Below JST Augusta: Positive	Hartwell: No Adverse RBR: No Adverse JST: No Adverse Below JST Augusta: Positive
Hydropower		Positive	No Adverse	Minor Adverse
Cultural Resources	No additional adverse impacts	No additional adverse impacts	No additional adverse impacts	No additional adverse impacts
Environmental Justice	No adverse impact	No disproportionately high and adverse impacts.	No disproportionately high and adverse impacts.	No disproportionately high and adverse impacts.

Conclusions/Drought Triggers

- **Current** **Proposed**
  - **Level 1 - No Restriction** **Level 1 – 4200 cfs**
  - **Level 2 - 4500 cfs** **Level 2 – 4000 cfs**
  - **Level 3 - 3600 cfs** **Level 3 – 3800 cfs**
  - **Level 4 – Outflow = Inflow** **Level 4 – Outflow = inflow**

- **Pool Elevations**
  - **Level 1 – JST @ 326’ / Hartwell @ 656’**
  - **Level 2 – JST @ 322’ & 324” / Hartwell @ 652’ and 654’**
  - **Level 3 – JST @ 316’ / Hartwell @ 646’**
  - **Level 4 – JST @ 312’ / Hartwell @ 625’ / RBR @ 470’**

Conclusions/Drought Plan Update

- **Proposed Action**
  - New Recovery Triggers set at 2’ above Drought Triggers
  - Increase the Minimum JST outflow from 3600 to 3800 cfs
  - Added a Maximum Drought Level 1 JST release of 4200 cfs
  - Decreases Maximum Drought Level 2 JST release from 4500 to 4000 cfs
  - Maximize RBR Pumped Storage Capability

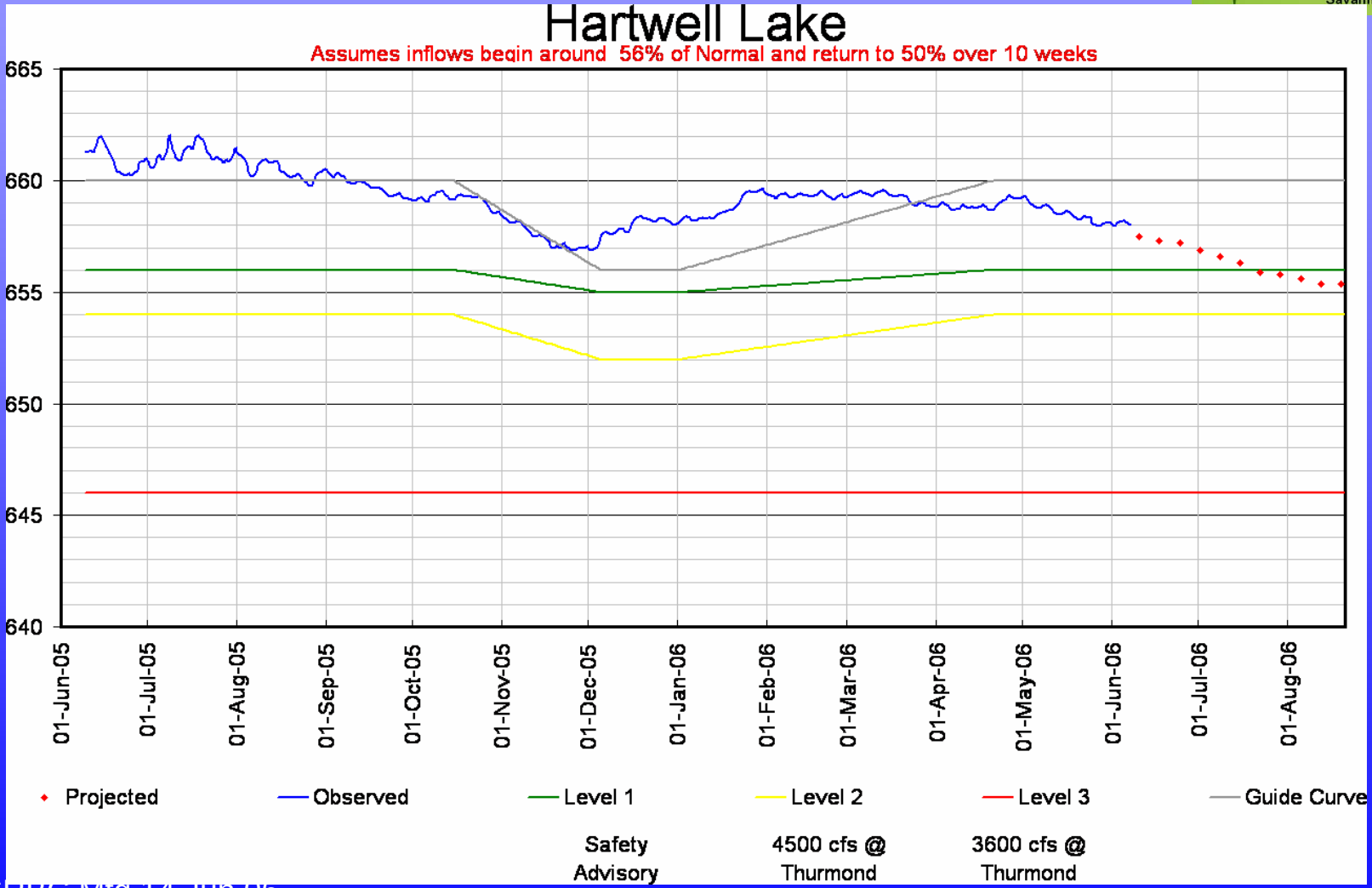
Conclusions/Drought Plan Update

- Maintains higher pools (3’ to 4’) in the Aug 99 to end of 2001 drought period
- Pools will be lower (about 1’) later in the drought period starting in late summer 2002
- Pools never hit Level 4 for at least 7 years into the drought of record
- Does not jeopardize any water intakes above or below the dams
- Minimal impacts to users

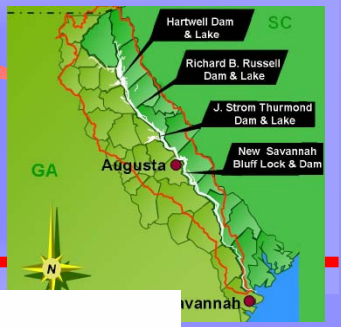
Environmental Evaluation Process

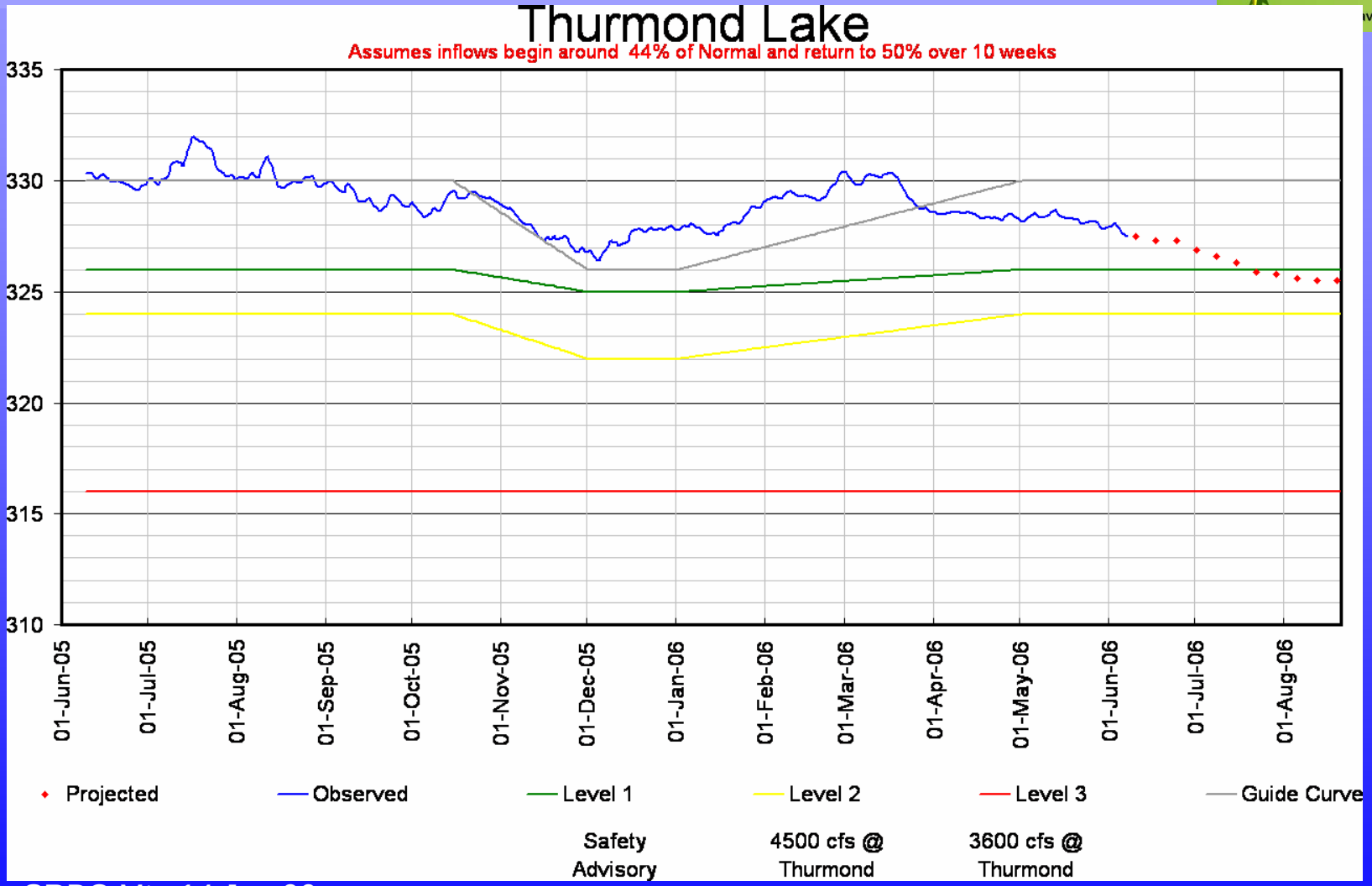
- Define Proposed Action
- Evaluate Potential Environmental Effects
- Prepare Draft Environmental Assessment
- Public and Agencies Review
- Finalize EA
- Make Federal Decision
  - Sign Finding of No Significant Impact

Current Projections



Current Projections





Savannah District Web Site

Look for us on the web!

www.sas.usace.army.mil

Comments / Questions!??